

What is claimed is:

1. A braking system comprising:
 - at least one power supply, said at least one power supply supplying electrical power;
 - a first brake component at least partially operated by electrical power;
 - a second brake component at least partially operated by electrical power;
 - a first power supply network electrically connecting said at least one power supply and said first brake component, said first power supply network adapted to transmit the electrical power from said at least one power supply to said first brake component;
 - a second power supply network electrically connecting said at least one power supply and said second brake component, said second power supply network adapted to transmit the electrical power from said at least one power supply to said second brake component; and
 - an auxiliary power supply link activatable to electrically connect said first brake component and said second brake component when a failure occurs in one of said first power supply network or said second power supply network, said auxiliary power supply link adapted to transmit the electrical power between said first brake component and said second brake component when the failure occurs.
2. The braking system of Claim 1 wherein said auxiliary power supply link comprises a bi-directional link adapted to transmit the electrical power from said first

brake component to said second brake component and from said second brake component to said first brake component.

3. The braking system of Claim 1 wherein said auxiliary power supply link comprises a first uni-directional link adapted to transmit the electrical power from said first brake component to said second brake component and a second uni-directional link adapted to transmit the electrical power from said second brake component to said first brake component.
4. The braking system of Claim 1 wherein said at least one power supply comprises two power supplies, wherein one of said two power supplies is electrically connected to said first power supply network, and wherein another of said two power supplies is electrically connected to said second power supply network.
5. The braking system of Claim 1 wherein said at least one power supply comprises a single power supply, and wherein the single power supply is electrically connected to both said first power supply network and said second power supply network.
6. The braking system of Claim 1 wherein said at least one power supply comprises two power supplies, and wherein each of the two power supplies is electrically connected to both said first power supply network and said second power supply network.

7. The braking system of Claim 1 further comprising:

a third brake component at least partially operated by electrical power, said third brake component electrically connected to said first power supply network;

a fourth brake component at least partially operated by electrical power, said fourth brake component electrically connected to said second power supply network; and

a second auxiliary power supply link activatable to electrically connect said third brake component and said fourth brake component when a failure occurs in one of said first power supply network or said second power supply network, said second auxiliary power supply link adapted to transmit the electrical power between said third brake component and said fourth brake component when the failure occurs.

8. The braking system of Claim 7 further comprising:

a fifth brake component at least partially operated by electrical power, said fifth brake component electrically connected to said first power supply network;

a sixth brake component at least partially operated by electrical power, said sixth brake component electrically connected to said second power supply network; and

a third auxiliary power supply link activatable to electrically connect said fifth brake component and said sixth brake component when a failure occurs in one of said first power supply network or said second power supply network, said third

auxiliary power supply link adapted to transmit the electrical power between said fifth brake component and said sixth brake component when the failure occurs.

9. The braking system of Claim 1 wherein each of said first brake component and said second brake component comprises a brake actuator comprising an electrical control unit operated by the electrical power supplied by said at least one power supply.
10. The braking system of Claim 1 wherein said first brake component and said second brake component are actuated by a power independent of the electrical power supplied by said at least one power supply and selected from the group consisting of electrical power, hydraulic power, pneumatic power and combinations of these.
11. The braking system of Claim 1 wherein said first brake component and said second brake component are actuated by the electrical power supplied by said at least one power supply.
12. The braking system of Claim 1 wherein said first brake component and said second brake component are disposed on a common axle of a vehicle.
13. The braking system of Claim 1 wherein said at least one power supply further supplies electrical power to a vehicle system selected from the group consisting of

an antilock brake system, an electronic braking force distribution system, a vehicle suspension system, a dynamic stability system and combinations of these.

14. The braking system of Claim 1 wherein enough electrical power to operate both said first brake component and said second brake component is transmitted over both said first power supply network and said second power supply network.

15. A braking system comprising:

at least one power supply, said at least one power supply supplying electrical power;

a plurality of pairs of brake components, each of said brake components at least partially operated by the electrical power supplied by said at least one power supply;

a first power supply network electrically connecting said at least one power supply and a first brake component of each pair of brake components, said first power supply network adapted to transmit the electrical power from said at least one power supply to the first brake component of each pair of brake components;

a second power supply network electrically connecting said at least one power supply and a second brake component of each pair of brake components, said second power supply network adapted to transmit the electrical power from said at least one power supply to the second brake component of each pair of brake components; and

a plurality of auxiliary power supply links activatable to electrically connect the first brake component of each pair of brake components and the second brake component of each pair of brake components when a failure occurs in one of said first power supply network or said second power supply network, said auxiliary power supply links adapted to transmit the electrical power between the first brake component of each pair of brake components and the second brake component of each pair of brake components when the failure occurs.

16. The braking system of Claim 15 wherein each of said plurality of auxiliary power supply links comprises a bi-directional link adapted to transmit the electrical power from the first brake component of each pair of brake components to the second brake component of each pair of brake components and from the second brake component of each pair of brake components to the first brake component of each pair of brake components.

17. The braking system of Claim 15 wherein each of said plurality of auxiliary power supply links comprises a first uni-directional link adapted to transmit the electrical power from the first brake component of each pair of brake components to the second brake component of each pair of brake components and a second uni-directional link adapted to transmit the electrical power from the second brake component of each pair of brake components to the first brake component of each pair of brake components.

18. The braking system of Claim 15 wherein said at least one power supply comprises two power supplies, wherein one of said two power supplies is electrically connected to said first power supply network, and wherein another of said two power supplies is electrically connected to said second power supply network.

19. The braking system of Claim 15 wherein said at least one power supply comprises a single power supply, and wherein the single power supply is electrically connected to both said first power supply network and said second power supply network.

20. The braking system of Claim 15 wherein said at least one power supply comprises two power supplies, and wherein each of the two power supplies is electrically connected to both said first power supply network and said second power supply network.

21. The braking system of Claim 15 wherein each of the brake components comprises a brake actuator comprising an electrical control unit operated by the electrical power supplied by said at least one power supply.

22. The braking system of Claim 15 wherein each of the brake components is actuated by a power independent of the electrical power supplied by said at least one power supply and selected from the group consisting of electrical power, hydraulic power, pneumatic power and combinations of these.

23. The braking system of Claim 15 wherein each of the brake components is actuated by the electrical power supplied by said at least one power supply.
24. The braking system of Claim 15 wherein each pair of brake components is disposed on a common axle of a vehicle.
25. The braking system of Claim 15 wherein said at least one power supply further supplies electrical power to a vehicle system selected from the group consisting of an antilock brake system, an electronic braking force distribution system, a vehicle suspension system, a dynamic stability system and combinations of these.
26. The braking system of Claim 15 wherein enough electrical power to operate all of the brake components is transmitted over both said first power supply network and said second power supply network.
27. A method of distributing electrical power to a brake system including at least one power supply supplying electrical power, a first brake component at least partially operated by the electrical power, and a second brake component at least partially operated by the electrical power, said method comprising the steps of:
causing the first brake component and the second brake component to perform internal status checks;

causing the first brake component to cross-check the status of the second brake component and the second brake component to cross-check the status of the first brake component in order to determine if a failure exists; and

determining, if a failure exists, based upon one or more rules and the particular failure which exists, whether or not to activate an auxiliary power supply link activatable to electrically connect the first brake component and the second brake component, and if a decision is made to activate the auxiliary power supply link, activating the auxiliary power supply link in order to supply power to the one of the first brake component or the second brake component in connection with which the failure was determined to exist.

28. The method of Claim 27 further comprising the step of:

providing, if a failure is determined to exist and a decision is made not to activate the auxiliary power supply link, an indication to a vehicle operator that a critical failure has been determined to exist.

29. The method of Claim 27 further comprising the step of:

providing, if a failure is determined to exist and a decision is made to activate the auxiliary power supply link, an indication to a vehicle operator that a non-critical failure has been determined to exist.

30. The method of Claim 27 further comprising the step of:

initiating, if no failure is determined to exist, communication between one or more control units and the first and second brake components and starting to perform required braking functions.

31. The method of Claim 27 further comprising the step of:

initiating, if a failure is determined to exist and the auxiliary power supply link has been activated, communication between one or more control units and the first and second brake components and starting to perform required braking functions.

32. The method of Claim 27 wherein said causing steps and said determining step are performed at system start up.

33. The method of Claim 27 wherein said causing steps and said determining step are performed periodically or from time to time.